Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

The auxiliary lens is not strictly necessary, as the vertical scale may be brought into focus by drawing out the ocular. In this case, however, it is not advisable to examine the screw concurrently with the latitude-observations, as the constants of the instrument are liable to disturbance.

The method which has been almost exclusively employed for determining the screw-errors of a zenith-telescope is that afforded by elongations of close circumpolar stars. The weak point in this method is the dependence upon the latitude-levels. A complete elongation of *Polaris* or of λ *Ursæ Minoris* occupies more than an hour for a telescope with a field of twenty minutes of arc. Latitude-levels, even under favorable circumstances, cannot be depended upon to maintain a constant angle with the telescope for so long a time. Moreover, during an elongation the observer must remain at one end of the levels — just the position in which the heat from his body is likely to warp them. It is this circumstance probably, to which are due the inaccurate results sometimes obtained by the method of elongations.

In his "Anleitung zum Gebrauche des Zenitteleskops" (Berlin, 1899), Doctor ALBRECHT has recommended the use of an auxiliary micrometer, to be fixed at the eye-end of the telescope. The errors of both screws can thus be determined simultaneously. In this method the optical system during the examination of the screw is entirely different from that used for the latitude observations, and slight systematic errors may creep in. This objection also applies, but in a lesser degree, to the method of this paper. The latter has the additional advantages of greater convenience and in requiring practically no auxiliary apparatus.

INTERNATIONAL LATITUDE OBSERVATORY,
Ukiah, California, 19 November, 1901.

PLANETARY PHENOMENA FOR MARCH AND APRIL, 1902.

By MALCOLM MCNEILL.

MARCH.

The Sun crosses the equator from south to north on March 21st, 5 A.M., Pacific standard time.

Mercury is a morning star, and comes to greatest west elongation on March 17th. Although its distance from the Sun at this time is 28° nearly, 10° more than it was at the east elongation in February, the planet is so far south of the Sun that the conditions for visibility are not very good. However, for the first twenty days of the month it rises about an hour before sunrise, and may be seen, if the weather conditions are exceptionally good, in the morning twilight.

Venus passed inferior conjunction on February 14th, and moves rapidly away from the Sun, so that by March 1st it rises about an hour and a half before sunrise. It ceases to move westward among the stars, and begins its longer eastward motion on March 6th; so its rate of recession from the Sun diminishes rapidly. At the end of the month it rises about two hours before sunrise. It will be very bright throughout the month, and will be at maximum brilliancy on March 21st. At this time it is about half-way between inferior conjunction and greatest elongation.

Mars is very near the Sun throughout the month, and on March 29th is in superior conjunction, becoming a morning star. Owing to the eccentricity of its orbit, this time of conjunction does not coincide with the time of maximum distance from the Earth. This does not occur until the latter part of May. The planet is about at its faintest, and will not brighten up much for several months.

Jupiter is getting far enough west of the Sun to be seen in the morning twilight. Its time of rising on March 1st is about the same as that of *Venus*, but it is considerably farther south. It moves about 6° eastward in the constellation *Capricorn.*

Saturn rises nearly an hour before *Jupiter*, and its distance from the latter increases from 11° to 15° during the month. It moves about 2° eastward in the region between *Sagittarius* and *Capricorn.*

Uranus rises not long after midnight. It is in the lower extension of *Ophiuchus*, between *Scorpio* and *Sagittarius.*

Neptune is in the extreme western part of *Gemini*, and is above the horizon until after midnight.

APRIL.

There will be two eclipses during April, neither of them visible in the United States.

The first is a partial eclipse of the Sun on April 8th, visible only in the northern parts of America and Asia. The maximum obscuration of the Sun will be only .06 of its diameter.

The second is a total eclipse of the Moon on April 22d, not visible in the western hemisphere.

Mercury is a morning star until April 28th. It then passes superior conjunction, and becomes an evening star, but throughout the month remains too near the Sun to be seen with the naked eye.

Venus is still the most conspicuous object in the morning sky. It rises about two hours before the Sun throughout the month. It comes to its greatest west elongation, 46°, on April 25th. The interval between rising of the Sun and planet is much shorter than it usually is at time of greatest elongation, on account of the fact that *Venus* is far south of the Sun at the time.

Mars is entirely too near the Sun and too faint to be seen during April. It is in the morning sky, but by the end of the month it is only 6° west of the Sun, and rises less than twenty minutes earlier.

Jupiter by the end of April rises at about half after one o'clock, and is therefore in a position for easy observation for early risers. It moves about 4° eastward in the constellation *Capricorn.*

Saturn rises about an hour before *Jupiter.* It is in the western part of *Capricorn* and is still moving eastward, but with a much slower motion than that of *Jupiter*, only 1° during the month.

Uranus keeps about the same place. It ceases its eastward motion during March, and is now slowly moving westward.

Neptune remains in the western part of *Gemini.*

MARCH–APRIL, 1902.

PHASES OF THE MOON, P. S. T.

Last Quarter . . .	Mar. 2,	2^h	39^m	A. M.
New Moon . . .	Mar. 9,	6	50	P. M.
First Quarter . . .	Mar. 16,	2	13	
Full Moon . . .	Mar. 23,	7	21	
Last Quarter . . .	Mar. 31,	10	24	
New Moon . . .	Apr. 8,	5	50	A. M.
First Quarter . . .	Apr. 14,	9	26	P. M.
Full Moon . . .	Apr. 22,	10	50	A. M.
Last Quarter . . .	Apr. 30,	2	58	P. M.

THE SUN.

1902.	R. A.	Declination.	Rises.	Transits.	Sets.
Mar. 1,	$22^h 46^m$	— 7°49′	$6^h 39^m$ A.M.	$12^h 13^m$ P.M.	$5^h 47^m$ P.M.
11,	23 23	— 3 58	6 23	12 10	5 57
21,	0 0	— 0 1	6 8	12 8	6 8
31,	0 36	+ 3 54	5 51	12 4	6 17
Apr. 10,	1 13	+ 7 42	5 36	12 2	6 28
20,	1 50	+ 11 17	5 20	11 59 A.M.	6 38
30,	2 27	+ 14 34	5 7	11 57	6 47

Mercury.

Mar.	1,	21 30	— 12 24	5 39 A.M.	10 56 A.M.	4 13 P.M.
	11,	21 42	— 13 40	5 15	10 28	3 41
	21,	22 21	— 11 57	5 9	10 28	3 47
	31,	23 11	— 7 45	5 6	10 40	4 14
Apr.	10,	0 10	— 1 30	5 4	10 59	4 54
	20,	1 17	+ 6 25	5 5	11 26	5 47
	30,	2 34	+ 15 6	5 12	12 4 P.M.	6 56

Venus.

Mar.	1,	21 13	— 7 45	5 6 A.M.	10 40 A.M.	4 14 P.M.
	11,	21 13	— 9 18	4 32	10 0	3 28
	21,	21 27	— 9 59	4 9	9 35	3 1
	31,	21 52	— 9 38	3 53	9 20	2 47
Apr.	10,	22 23	— 8 18	3 40	9 12	2 44
	20,	22 58	— 6 8	3 28	9 8	2 48
	30,	23 35	— 3 15	3 14	9 5	2 56

Mars.

Mar.	1,	23 11	— 6 18	6 18 A.M.	12 37 P.M.	6 16 P.M.
	11,	23 39	— 3 10	6 36	12 26	6 16
	21,	0 8	— 0 0	6 15	12 15	6 15
	31,	0 36	+ 3 9	5 54	12 4	6 14
Apr.	10,	1 4	+ 6 12	5 33	11 53 A.M.	6 13
	20,	1 33	+ 9 8	5 13	11 42	6 13
	30,	2 1	+ 11 54	4 50	11 31	6 12

Jupiter.

Mar.	1,	20 30	— 19 22	5 6 A.M.	9 57 A.M.	2 48 P.M.
Apr.	1,	20 55	— 17 53	3 35	8 20	1 5
May	1,	21 12	— 16 46	1 37	6 39	11 41 A.M.

Saturn.

Mar.	1,	19 45	— 21 9	4 27 A.M.	9 12 A.M.	1 57 P.M.
Apr.	1,	19 55	— 20 45	2 34	7 20	12 6
May	1,	19 59	— 20 35	12 39	5 26	10 13 A. M.

Uranus.

Mar.	1,	17 21	— 23 12	2 12 A.M.	6 48 A.M.	11 24 A.M.
Apr.	1,	17 22	— 23 13	12 11	4 47	9 23
May	1,	17 20	— 23 12	10 7 P.M.	2 43	7 19

Neptune.

Mar.	1,	5 54	+ 22 17	noon.	7 20 P.M.	2 40 A.M.
Apr.	1,	5 55	+ 22 18	9 58 A.M.	5 18	12 38
May	1,	5 57	+ 22 20	8 3	3 23	10 43 P. M.

ECLIPSES OF *JUPITER'S* SATELLITES, P. S. T.

(Off left-hand limb as seen in an inverting telescope.)

I, D,	Mar. 6,	6^h	19^m A.M.	IV, R,	April 1,	3^h	31^mA.M.
II, D,	12,	3	21	II, D,	6,	12	22
I, D,	15,	2	42	I, D,	7,	2	52
IV, D,	15,	5	9	I, D,	13,	2	50
II, D,	19,	5	56	I, D,	14,	4	46
I, D,	22,	4	36	III, R,	20,	12	51
III, D,	22,	5	26	II, D,	20,	5	30
I, D,	31,	12	58	I, D,	23,	1	8
				III, D,	27,	2	23
				III, R,	27,	4	51
				I, D,	30,	3	2

HUSSEY'S MEASURES OF THE OΣ DOUBLE STARS.*

By S. W. Burnham.

One of the most important and interesting contributions of practical astronomical work has just been issued by the great Observatory at Mt. Hamilton, as Volume V of the *Publications of the Lick Observatory*. This quarto volume of 227 pages contains the reobservation and measurement by Professor Hussey of all the double stars of the first edition of the Poulkowa Catalogue of 1843. Each of the pairs has been measured on an average of three nights with either the 12-inch or the 36-inch refractor, the most difficult of these objects, of course, being observed with the large instrument. The measures were made principally from 1897 to 1900, and, for the most part, all the measures of each star were made in the same year. It is well known that in the second edition of 1850 of the Poulkowa Catalogue many of the stars of the first catalogue were rejected,—some because the suspected elongation was not confirmed by subsequent examinations, some because the companion-star was too distant, and some because they had been found to be identical with previously known pairs in the catalogues of W. Struve, Herschel, and others. These rejected numbers amount altogether to 106 stars. The original number of the OΣ stars was 514, but other new pairs were found from time to time, and the total number was finally extended to 547.

---

*Reprinted from *Popular Astronomy* for December, 1901.